University of Minnesota
Agricultural Extension Service ● U. S. Department of Agriculture
FACT SHEET

AGRICULTURAL ENGINEERING NO. 9

D. W. BATES

Are You Having Paint Trouble?

Property that boasts a well-painted home or set of farm buildings is a pleasing sight--it conveys a note of thriftiness, prosperity, and good management. On the other hand, poorly painted buildings can create an impression of mismanagement and economic difficulty.

The reasons for an unsatisfactory paint job can be many--the wrong paint, cheap paint, faulty application, or even poorly constructed buildings. Aside from these factors, here are some of the most common problems.

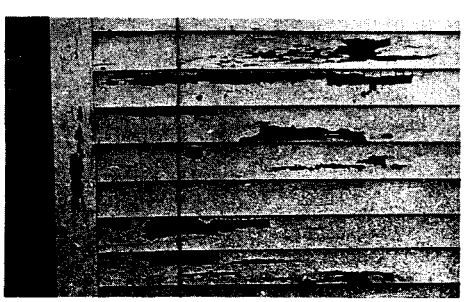
WOOD SURFACES

Various kinds of woods react differently to paint. Paint gives better service and lasts longer on some kinds of woods than on others. Softwoods of low density will hold paint better than those of high density. Edge-grained boards will hold paint much better than will flat-grained boards. Woods that have broad summerwood bands present special problems.

PREVENTION OF MOISTURE

When moisture is mentioned, the average person probably thinks of rain and snow beating against the sides of the building. It is true that external moisture can do great harm, but moisture and dampness from within frequently cause greater paint damage.

It has been estimated that the activities of a family of four normally will introduce about 6 gallons of water a day into the air of an average house. Sources of this moisture are cooking, bathing, and washing and drying clothes, as well as the moisture exhaled in breathing. Of course, the amount of moisture liberated in different households varies with living habits.

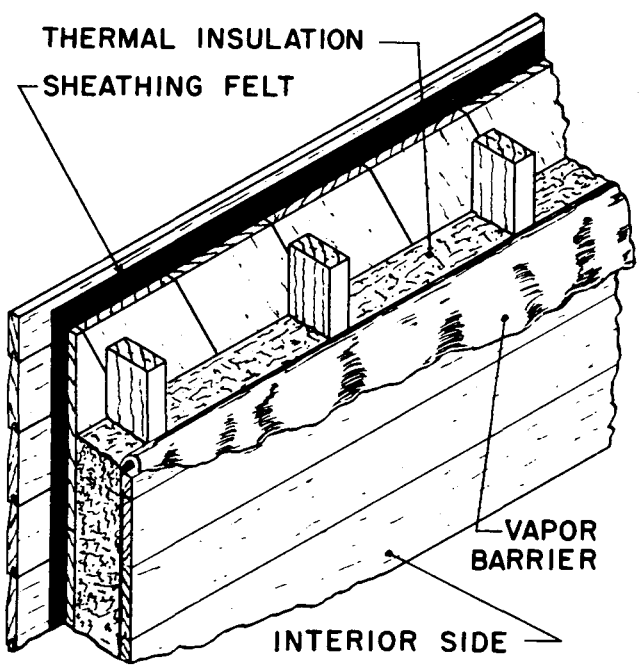


Paint peeling caused by uncontrolled moisture from within the building.

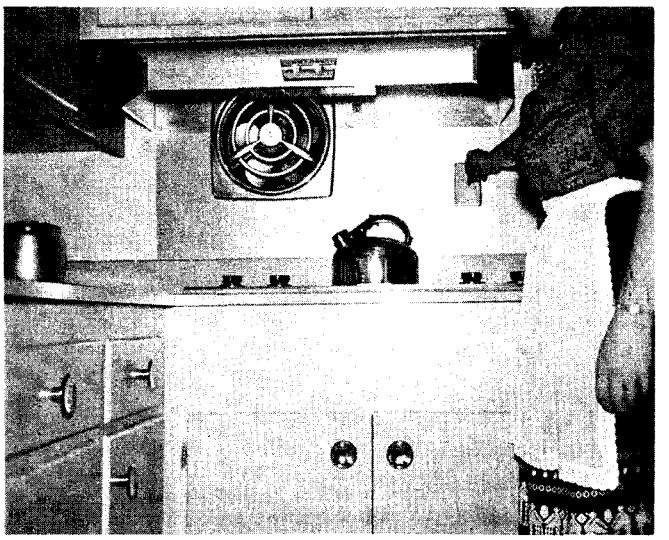
In livestock shelters that are kept closed, the problem is intensified because of the large quantities of moisture animals give off when they breathe. For example, the breathing of a large cow can add as much as 2 gallons of water a day to the air.

Unless walls are constructed properly, moisture liberated inside buildings will permeate the interior walls and eventually will permeate the exterior walls, causing blistering, scaling, and other paint failures. To insure proper wall construction, a vapor barrier must be provided on the inside or warm wall. A vapor barrier is a material through which water vapor will not pass. Some such materials are asphalt-impregnated papers, metal foil, or polyethylene. Some types of blanket or batt-type insulation come with a vapor barrier attached.

Two coats of a good oil or rubber base paint applied to the inside walls also may serve as a vapor barrier. Be sure that all joints, cracks, corners, and openings through which plumbing or electrical fixtures pass are tightly sealed.



Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U. S. Department of Agriculture. Luther J. Pickrel, Director of Agricultural Extension Service, University of Minnesota, St. Paul, Minnesota 55101. 3M--10/66



Kitchen fan carries away moisture and odors.

REMOVAL OF MOISTURE

Preventing moisture from entering walls is only the first step. Unless you make provisions for removing moisture, the inside of the building may take on the characteristics of a Finnish bath. Water will condense on windows and doors, causing them to swell and making them difficult to open and shut. Besides causing painting problems, this moisture can be very damaging to the building itself. Moisture prevention is just as important in dwellings as it is in livestock shelters and other buildings.

"Airing" the house each day is an effective means of removing internal moisture. Some people object to this practice because they think it will increase their fuel bills greatly. Actually, such a practice will raise your fuel bill very little.

Leaving a fireplace flue open will provide additional ventilation. While a fire actually is burning, the rate of air removal will increase greatly.

Gas-burning appliances and clothes driers should be vented directly to the outside.

If you have animal shelters on your property that are kept closed in cold weather, you must provide both a planned ventilation system and adequate insulation. Adequate flashing, roof gutters, down spouts, and tight-fitting joints also are necessary to keep external moisture from entering the walls and getting under the paint.

You can protect new siding by treating it with a water-repellent preservative. Preferably, the siding should be dipped in the preservative before it is installed. However, you can brush on the repellent after the siding is installed but before it is painted. Such preservatives contain waxes, resins, and oils that prevent moisture from entering the wood through joints or by capillary action. They are available through lumber dealers and paint stores.

Rust spots around the heads of nails that hold siding in place are a common problem. The best preventive is to use zinc-coated, aluminum, or other noncorrosive nails. Even small-headed steel nails, countersunk and puttied, may eventually spot the finish with rust.

Unwanted moisture often enters dwellings through basement walls. Under certain conditions, this moisture can seep through the walls to the wood members attached to them, destroying the adhesion of the exterior paint. Wood members that will be in contact with concrete should be treated with wood preservative.

For new construction, a heavy coating of asphalt should be applied to the outside of a wall before earth is placed against it. In heavy soil, a drain tile should be placed around the base of the footing and carried to a suitable outlet. This process is a difficult and expensive one to perform after a house is constructed.

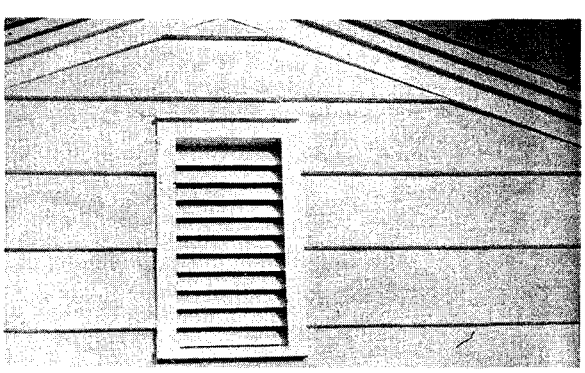
Very small amounts of water can be excluded by applying a suitable paint to the interior of a basement wall. However, if the pressure of external water against the paint is very great, the painting will be of little value.

Paint-destroying moisture also may emanate from the ground in the crawl spaces beneath houses that have no basements. Adequate ventilation of this space is necessary. A recommended rule is to allow 2 square feet of opening for every 100 linear feet of wall plus 1 square foot per 300 square feet of crawl space.

In a cold climate, providing this ventilation may result in cold floors unless additional insulation is provided. If the bare earth is covered with heavy roll roofing lapped at least 6 inches, only about 10 percent of the ventilation area otherwise required will be necessary.

In many instances, moisture finds its way to the attic of a dwelling. You must provide adequate ventilation if this moisture is to be removed without causing damage. Using louvers that have a net area of 1 square foot for each 300 square feet of area in the attic is recommended.

If you have been having paint failures on buildings, check for the above sources of moisture before you condemn the paint. Unless these difficulties are corrected, the failure of subsequent coats of paint is almost certain.



Attic ventilation releases damaging moisture.